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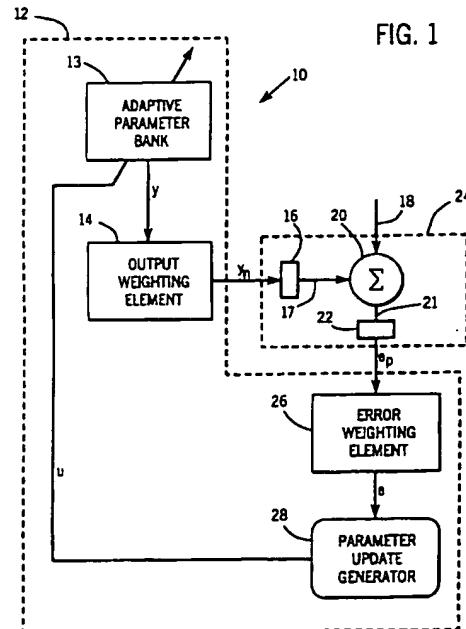
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(54) Adaptive tonal control system with constrained output and adaptation

(57) An adaptive control system and method for actively canceling tones in an active acoustic attenuation system has an adaptive parameter bank. Adaptation of the adaptive parameter bank can be constrained with respect to the null space of a C model of an auxiliary path (e.g. speaker-error). Alternatively, output from the adaptive parameter bank can be constrained with respect to the effective null space of the C model. The preferred system uses singular value decomposition, normalization, and demodulation to implement the methods of constraining output and adaptation. The invention can eliminate stability and tracking problems associated with over-parameterization.





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## **EUROPEAN SEARCH REPORT**

**Application Number**

EP 96 30 0079

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X,P	US 5 440 641 A (KUUSAMA JUHA)	1,5,13, 18,25,38	G10K11/178
Y	* abstract * * figures 1-3 * * column 3, line 10 - line 26 * * column 4, line 26 - column 5, line 22 * * claim *	35	
A	US 5 049 795 A (MOULDS III CLINTON W)	1,8,23, 25,35, 45,50	
Y	* abstract * * figures 1,2 * * claims 1,2,7-9 *	1	
D,A	US 4 677 676 A (ERIKSSON LARRY J) * the whole document *	---	
Y	US 5 278 913 A (DELFOSSE KENT F ET AL) * abstract * * figures 1-3 * * column 1, line 40 - column 2, line 9 *	---	1
A	US 5 233 540 A (ANDERSSON ANDERS O ET AL) * abstract * * column 4, line 35 - column 5, line 21 *	---	1
A	US 5 170 433 A (ELLIOTT STEPHEN J ET AL) * figure 5 *	---	29
Y	US 4 950 966 A (MOULDS III CLINTON W) * figures 1-4,7 *	-----	35
The present search report has been drawn up for all claims			
Place of search	Date of completion of the search	Examiner	
THE HAGUE	30 March 1998	de Heering, Ph.	
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone	T : theory or principle underlying the invention		
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